

CLAIMS

1. A communications system for adaptively controlling a modulation mode and an encoding rate for data transmitted from a transmitter to a receiver, wherein:

said receiver comprises channel quality measuring means for measuring a channel quality, and control channel error detecting means for detecting an error of a control channel, and

said transmitter comprises adaptive modulation control means for controlling the modulation mode and encoding rate in accordance with the channel quality notified from said receiver, and transmission power control means for controlling a transmission power ratio of the control channel to a data channel in accordance with a control channel error detection result notified from said receiver and the modulation mode and encoding rate.

2. The communications system according to claim 1, wherein said transmission power control means includes:

means for independently calculating a control channel error ratio for each combination of the modulation mode and encoding rate determined by said adaptive modulation control means; and

means for variably controlling the transmission power ratio of the control channel to the data channel in accordance with the control channel error ratio.

3. The communications system according to claim 1, wherein said transmission power control means controls the transmission power ratio of

the control channel to the data channel within a range in which the transmission power ratio is independently set for each combination of the 5 modulation mode and encoding rate.

4. The communications system according to claim 1, wherein said transmission power control means controls a transmission power ratio of a pilot channel to the data channel as well as the transmission power ratio of the control channel to the data channel.

5. A transmitter for adaptively controlling a modulation mode and an encoding rate for data transmitted to a receiver, comprising:

adaptive modulation control means for controlling a modulation mode and an encoding rate in accordance with a channel quality notified from said 5 receiver; and

transmission power control means for controlling a transmission power ratio of a control channel to a data channel in accordance with a control channel error detection result notified from said receiver and the modulation mode and encoding rate.

6. The transmitter according to claim 5, wherein said transmission power control means includes:

means for independently calculating a control channel error ratio for each combination of the modulation mode and encoding rate determined by 5 said adaptive modulation control means; and

means for variably controlling the transmission power ratio of the control channel to the data channel in accordance with the control channel

error ratio.

7. The transmitter according to claim 5, wherein said transmission power control means controls the transmission power ratio of the control channel to the data channel within a range in which the transmission power ratio is independently set for each combination of the modulation mode and 5 encoding rate.

8. The transmitter according to claim 5, wherein said transmission power control means controls a transmission power ratio of a pilot channel to the data channel as well as the transmission power ratio of the control channel to the data channel.

9. A communication control method for adaptively controlling a modulation mode and an encoding rate for data transmitted from a transmitter to a receiver, comprising the steps of:

- measuring a channel quality in said receiver;
- 5 detecting a control channel error in said receiver;
- notifying the channel quality and the control channel error from said receiver to said transmitter;
- controlling, in said transmitter, a modulation mode and an encoding rate in accordance with the channel quality notified from said receiver; and
- 10 controlling, in said transmitter, a transmission power ratio of a control channel to a data channel in accordance with a control channel error detection result notified from said receiver and the modulation mode and encoding rate.

10. The communication control method according to claim 9, wherein said step of controlling a transmission power ratio includes the steps of:

calculating a control channel error ratio independently for each combination of the modulation mode and encoding rate; and

5 variably controlling the transmission power ratio of the control channel to the data channel in accordance with the control channel error ratio.

11. The communication control method according to claim 9, wherein said step of controlling a transmission power ratio includes the step of controlling the transmission power ratio of the control channel to the data channel within a range in which the transmission power ratio is independently set for each combination of the modulation mode and encoding rate.

5 12. The communication control method according to claim 9, comprising the step of controlling a transmission power ratio of a pilot channel to the data channel in accordance with a control channel error detection result notified from said receiver, and the modulation mode and encoding rate.

13. A transmission control method in a transmitter for adaptively controlling a modulation mode and an encoding rate for data transmitted to a receiver comprising the steps of:

5 controlling the modulation mode and encoding rate in accordance with a channel quality notified from said receiver; and

controlling a transmission power ratio of a control channel to a data channel in accordance with a control channel error detection result notified

from said receiver and the modulation mode and encoding rate.

14. The communication control method according to claim 13, comprising the step of controlling a transmission power ratio of a pilot channel to the data channel in accordance with the control channel error detection result notified from said receiver and the modulation mode and
5. encoding rate.